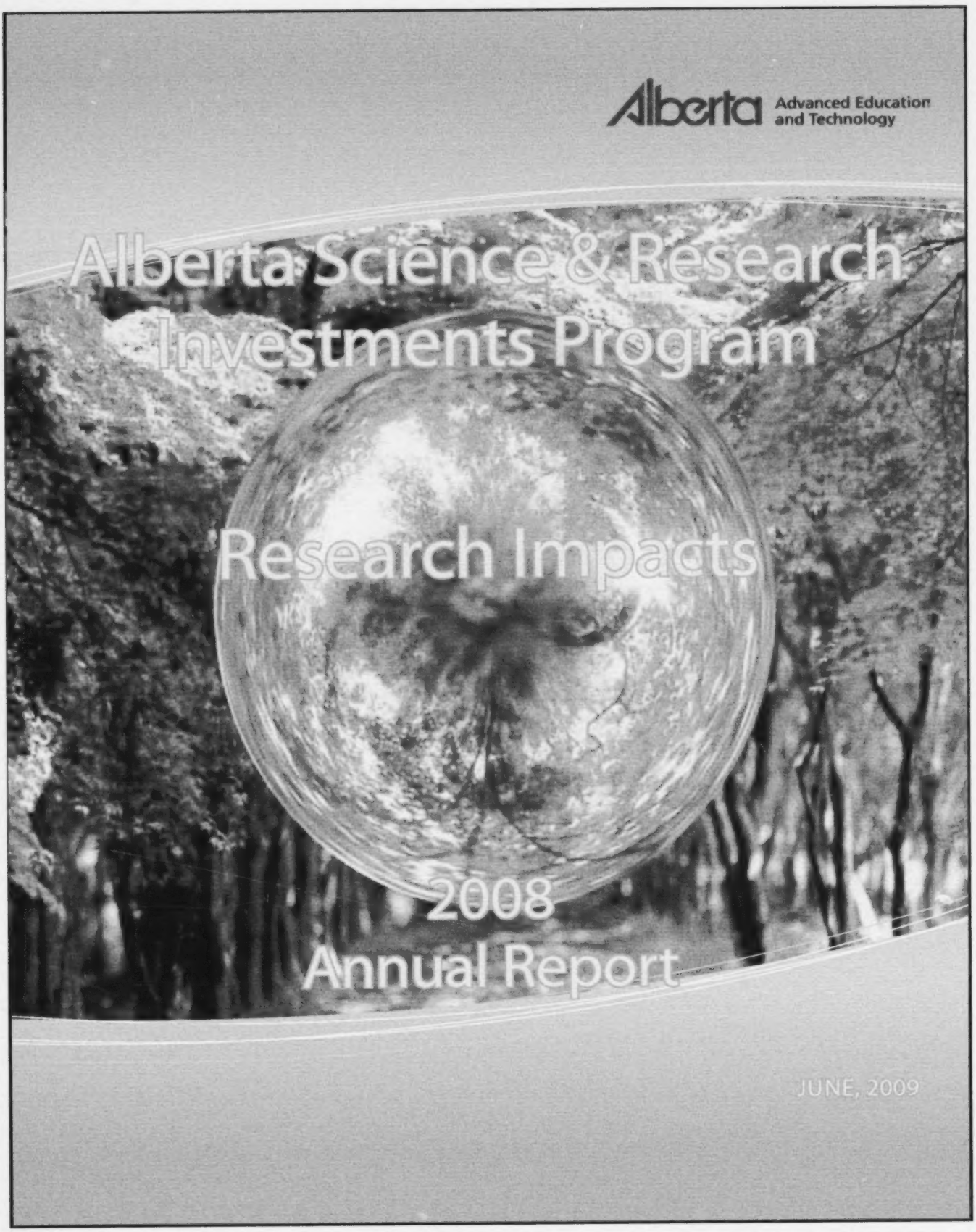
Alberta
Advanced Education and Technology
Alberta Science & Research Investments Program
Research Impacts
2008
Annual Report
JUNE, 2009

ANNUAL REPORT
2008

ALBERTA SCIENCE AND RESEARCH INVESTMENTS PROGRAM

Research Impacts

this report

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Solutions For a New Economy

The ASRIP places a high priority on innovative research and scientific excellence and is intended for investment in critical infrastructure that will enable researchers, institutions and their partners to develop exceptional state-of-the-art research programs to maintain or enhance the competitiveness of the province's university research system.

This includes providing training opportunities to aspiring young people and ensuring that they are able to develop into well-educated citizens who are able to fully participate in a knowledge-based economy.

Exploring new information and technology

The Alberta Science and Research Investments Program (ASRIP) has been an active participant in the funding of research infrastructure at Alberta universities since 2000. The ASRIP provides research infrastructure as a tool to retain and attract the best and brightest researchers in an effort to foster innovation and diversify Alberta's economy. The ASRIP coordinates with Alberta's research institutes and foundations to ensure that capacity is built within Alberta's strategic research areas and that small and large equipment investments complement other targeted provincial funding.

Excellent researchers are key attractants to major industries and a critical factor in developing, attracting, and retaining successful new companies.

The ASRIP focuses investment in the areas of energy, life sciences, and information and communications technology (ICT). Alberta's research system is strategically enhanced and well-positioned to recruit and retain excellent people—the scientists, technicians, graduate students, and emerging entrepreneurs that are integral to unleashing innovation.

The ASRIP also serves as an important mechanism for leveraging funds from the federal Canada Foundation for Innovation (CFI), the private sector and other sources in order to maximize the research dollars flowing into Alberta's research priority areas.

As this impacts report illustrates, the ASRIP investments have supported research success by providing world-class research infrastructure to build capacity and help Alberta's research intensive institutions recruit and retain top quality researchers.

ASRIP's Funding Streams

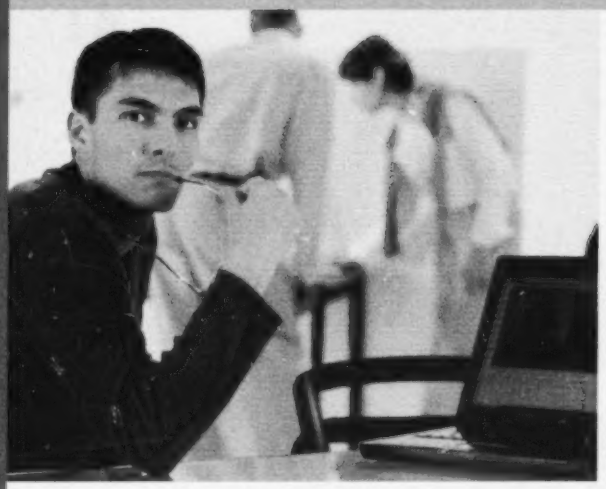
The Program has two core funding streams to which eligible Alberta institutions can apply:

Infrastructure Sustainability (IS): supports proposals that build on and enhance already successful and productive initiatives supported by past ASRIP and/or CFI investments.

Research Infrastructure (RI): focuses on supporting initiatives that provide new research capacity in Alberta.

The Program also periodically runs a third stream in coordination with the CFI:

Platform Technology (PT): focuses on supporting initiatives that provide cross cutting technology for investigators in diverse areas of research.



ASRIP's Research Impacts

The Program provides infrastructure funding for innovative and strategic research projects in Alberta.

The Alberta Science and Research Investments Program (ASRIP) ran four competitions between 2000 and 2008. During this period, the ASRIP strategically invested over $125 million in 90 infrastructure projects that have significantly increased the research capacity in Alberta. The total value of these projects was nearly $669 million with the remainder of the funding coming from the federal government, the private sector, and non-profit sources.

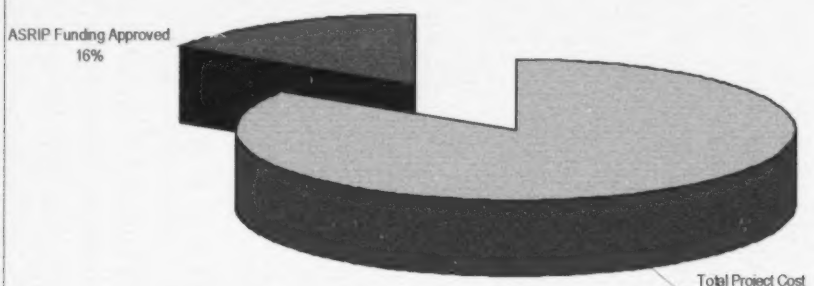
In that time, the program has implemented the Advanced Education & Technology (AET) business plan strategy "to provide strategically targeted support for Alberta university research infrastructure." The ASRIP is the only major program within the Ministry that provides funding dedicated specifically to research infrastructure and, as such, it is an essential vehicle for universities seeking to acquire critical equipment needed to undertake innovative, leading edge research. The research infrastructure funded through previous competitions has been instrumental in launching or sustaining areas of research excellence and assisting in the recruitment and retention efforts at Alberta universities. The ASRIP has invested in three targeted research areas: Life Sciences ($74.3 million), Information and Communications Technology ($8.8 million), and Energy ($19 million), while supporting multi-disciplinary projects that cross these areas of priority ($22.9 million). Multi-disciplinary projects have impacted climate change/environment, nanotechnology, engineering and social sciences.

After nine years of investments, the ASRIP has significantly impacted the larger research community. By promoting research quality, fostering innovation,

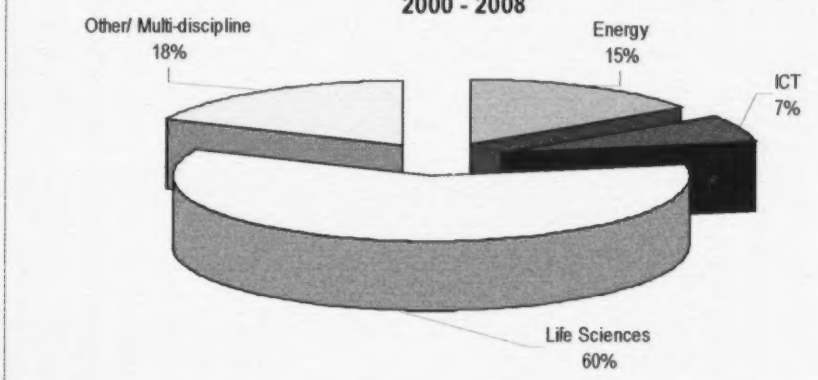
and supporting strategic initiatives, the ASRIP is benefiting Alberta. Key research initiatives supported by the program have gained national and international recognition and contributed to Alberta through training a highly qualified workforce, providing new knowledge that leads to new company development, and the development of treatments and diagnoses for improved health outcomes.

This report presents highlights of selected research outcomes. A complete listing of all the ASRIP infrastructure projects funded from 2000 to 2008 is detailed on pages 14 to 32.

ASRIP's Leverage from Total Project Funding of $669 Million
2000 - 2008



Total ASRIP Investment of $125 Million by Key Strategic Area
2000 - 2008



EYE ON IT
Current Strategies

Applicants to the ASRIP are advised to submit proposals in the strategic priority areas of energy, life sciences, information and communications technology (ICT) and nanotechnology. Proposals to develop broad research capacity are also considered.

Between 2000 and 2008, ASRIP has strategically invested over $125 million in 90 infrastructure projects that have significantly increased the research capacity in Alberta.

MORE
Information

For more information on building research capacity in Alberta, please visit the AET website at www.advancededandtech.gov.ab.ca

Dr. Michael Brett

Nanofabrication Facility

A Nanofabrication Facility (Nanofab) was established in the cleanroom laboratory of the Electrical and Computer Engineering Research Facility at the University of Alberta. The Nanofab represents a major step forward in the new field of nanotechnology.

Nanotechnology is the science of working with materials at the nano-scale level (approximately 3-4 atoms wide). In more basic terms, it is the science of building materials and machines at a size that is 1/10,000 of the width of a human hair. It is universally viewed as the foundation of the next major revolution in technology, with societal and economic impacts expected to be larger than those of the computer revolution. Nanotechnology will play a vital role in many diverse areas. Since the start of the project, the facilities have been used by researchers from a very wide range of disciplines, including oncology, human ecology, public health, biomedical engineering, laboratory medicine, sciences and engineering. In total, users originate from 17 different university departments.

The project included acquisition of key equipment such as a nanolithography tool, automated photoresist processing, and thin film deposition and etching capabilities in order to enable new nanoscience and engineering research programs in fields of devices, photonics, magnetics, and biotechnology.

With the new infrastructure, the NanoFab has become a top-tier facility for innovation, on par with the very best three or four such laboratories in North America. The state-of-the-art tools provided by the ASRIP grant are being utilized by academic and industry researchers in six provinces for internationally competitive research and development.

The open-access operational model of the NanoFab brings together researchers from diverse disciplines, institutions, and companies in one location, leading to enhanced innovation through previously unlikely collaborations, maximizing the opportunities for new research ideas and products.

From 2003 to 2007, NanoFab has had 748 users of the facility and provides excellent training opportunities for students, graduate students and postdoctoral fellows. This figure includes research users from 132 academic research groups, 12 Canadian universities, six provinces, and 29 Canadian industries.

The academic research group leaders range from Assistant Professors to more senior researchers including 13 Canada Research Chairs and 5 NSERC Steacie fellows. Eight local startup companies also rely on the Nanofab for their R&D activity.

The equipment, expertise, and building infrastructure established through ASRIP funding or through leverage of this funding has attracted the National Research Council to build the National Institute for Nanotechnology (NINT) on the university campus.

Institution: University of Alberta

Funding Partners: Canada Foundation for Innovation, University of Alberta

ASRIP Funding: $3,082,460

Total Project Cost: $8,247,533

Visit the Michael Brett or The NanoFab research page for more information.

Dr. Susan Hannon[4]

Meanook Biological Research Station Enhancement

The Meanook Biological Research Station (MBRS) is a permanent research facility near Athabasca, Alberta. The station is situated on a 214 ha National Wildlife Area (NWA) within the transition zone of the boreal forest and the aspen parkland ecoregions. The NWA consists of 58 ha of regenerating fields, a 7.5 ha building site and 148.5 ha of woodlands dominated by aspen, balsam poplar and white birch. The location of MBRS gives researchers easy access to continuous and fragmented mixed wood boreal forest, peatlands, wetlands, agricultural land and a wide variety of lakes, rivers and creeks.

The ASRIP grant facilitated a major renovation of one of the buildings at the station and included converting an unheated section of the building into offices, upgrading facilities in the existing lab, and changing the previous office area into a computer and classroom facility. In addition, the living facilities for researchers was expanded by purchasing and installing utilities in a large ATCO trailer. Also acquired were equipment to modernize the lab, office and field research facilities at the station.

The renovation produced a larger training area (classroom, computer area) with a divider that allows more flexibility in space use and a new digital projector to enhance presentations and lectures. The improvement in lab equipment allows for the processing of samples quickly and efficiently. Improvements in computer hardware and software and satellite internet connection has improved MBRS onsite research capability. The meteorological station supplies local weather data for all projects.

The new infrastructure supported a number of state-of-the-art research projects. The improvements in the water quality lab supported a major project by Dr. Prepas, which studies the effects of forest harvesting and fires on stream watersheds. Water quality tests are conducted in the lab using major equipment purchased. Improvements in aquatic mesocosms (tanks, artificial ponds, well/pump) and field equipment have allowed Drs. W. Tonn and C. Paszkowski to expand their research programs on the ecology and life history of boreal fish and amphibian communities. These studies examine the role of predation and competition in community organization and also have links to effects of harvest of boreal forest on aquatic ecosystems.

Improvements in computer facilities, GPS and GIS equipment, and the meteorological station have allowed Dr. Hannon to initiate new research on the impacts of climate change and landscape fragmentation on the abundance and demography of bird populations. Creation of new space and purchase of equipment for computing and training has allowed the station to attract a new large-scale project, the Alberta Biodiversity Monitoring Project, which is using the facilities for training and sorting of samples. This ambitious project will sample biota across Alberta and use the data to establish trends in biodiversity over time at large spatial scales to aid in detecting changes in biodiversity caused by industrial development and climate change. The facilities are also being used as a base by a number of researchers who are examining carbon flux in forest and peatlands in relation to climate change.

In 2005, a total of 73 undergraduates, graduate students and postdocs utilized or received training at the facility.

Institution: University of Alberta

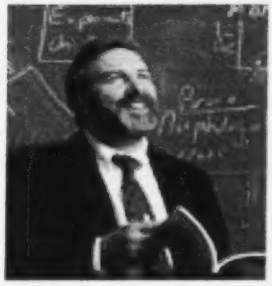
Funding Partners: Canada Foundation for Innovation, University of Alberta

ASRIP Funding: $287,500

Total Project Cost: $670,000

Visit the Susan Hannon or Meanook research page for more information.

Dr. Gary Libben



Centre for Comparative Psycholinguistics

Dr. Libben is a psycholinguist who studies language, speech production and comprehension. To further his research and that of others at the University of Alberta, the Centre for Comparative Psycholinguistics was constructed to study the question of how structurally complex words are represented and processed in the mind. The ASRIP grant helped renovate needed space in the Arts building, provided technical support staff and equipment, including computers, an eye-tracking device used to follow the movement of pupils as a research subject reads text, and a machine for measuring electrical activity in the brain. Also acquired was a new RV for field research, equipped with lab equipment necessary to conduct state-of-the-art language analysis among populations never before studied.

The research conducted in The Centre for Comparative Psycholinguistics will allow both researchers and clinicians alike to develop the practical tools necessary to improve rehabilitation techniques used with patients affected by stroke, thereby significantly improving their quality of life. In fact, many of the projects focusing on developing these clinical tools are now underway.

Research conducted in the Centre has also targeted transfer of knowledge to teachers and second language learners of English and other languages by determining the best education techniques for optimal learning.

Finally, by documenting and archiving endangered languages, Dr. Libben and fellow researchers are playing an imperative role in preserving critical information for the indigenous peoples of Alberta that would otherwise be lost, such as resurrecting a dying Chipewyan language in the Cold Lake First Nations Community.

The research facility has played an important role in developing strong partnerships and collaborations that have established a strong presence of language research in Alberta. The existence of The Centre for Comparative Psycholinguistics has strengthened many internal and external funding applications by both students and professors from the Department of Linguistics and the Department of Psychology at the University of Alberta. Large scale federally and provincially funded projects have benefited from the Centre's technology and numerous resources.

It is safe to say that the Centre for Comparative Psycholinguistics has placed the University of Alberta at the forefront of psycholinguistic research in Canada. The facility has enabled the creation of innovative psycholinguistic experiments for testing speakers of many different languages across different platforms.

The research has been published in high ranking international journals, has served as an environment for the training and mentoring of graduate students, has aided in faculty retention, and has attracted new researchers to the University of Alberta. An average of 16 people per year have been hired to the Department and 11 people per year have been retained as a result of the new centre. These highly qualified people represent the best researchers, postdoctoral fellows, and graduate students in the field of linguistics. The Centre has also hosted many successful training workshops for students on the use of the specialized equipment.

Institution: University of Alberta

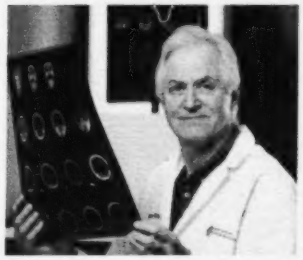
Funding Partners: Canada Foundation for Innovation, University of Alberta

ASRIP Funding: $297,474

Total Project Cost: $743,685

Visit the Centre for Comparative Psycholinguistics or the Gary Libben website for more information.

Dr. Bryan Kolb



Canadian Centre for Behavioural Neuroscience

The Canadian Centre for Behavioural Neuroscience (CCBN) is a new 60,000 sq ft facility that is unique in Canada and perhaps anywhere. This facility is devoted to behavioural neuroscience and as of mid 2007, houses 12 researchers, 35 graduate students, 6 postdoctoral fellows, and technical staff and undergraduates. The facility, which was funded by a variety of agencies including the Alberta Science and Research Investments Program, the Canada Foundation for Innovation, and Alberta Heritage Foundation for Medical Research, features state-of-the-art equipment including a confocal microscope, transmission electron microscope, 2 MRIs, NMR, and X-ray crystallography. In addition, there are new behavioural neuroscience facilities for *in situ* work, *in vitro* work, immunohistochemistry, protein analysis, behaviour, electrical microstimulation and recording, and electrophysiology, including a 128 channel human Event-Related Potential system. The infrastructure purchased with the ASRIP funding was to augment and update the equipment, particularly the retrofit of one 3T MRI for human work and a 4.7T MRI for small animals.

The treatment of neurological and psychiatric diseases is a priority in the provincial government's health care policies. The new infrastructure directly supports research to enhance the treatment and prevention of these disorders. The major impact of the infrastructure is related to the 3T and 4.7T MRIs, which were both installed and operating by early 2008.

The parallel use of the human and lab animal MRIs is innovative and will complement the ongoing parallel behavioural studies. Dr. Kolb's team anticipate the new equipment will allow for enhanced training of current staff and students and will attract new students and faculty. It is also a significant factor in retaining the existing behavioural neuroscientists at the University of Lethbridge.

There will be a clear opportunity for enhanced research collaborations among researchers both at the University of Lethbridge campus as well as beyond, and especially in Calgary and Edmonton. The scientists are currently organizing to enhance interactions with the Alberta Health Services and the Blood Reserve. The Centre's collaborations with the private sector, and related spin-off companies will benefit significantly from the new facilities supported by this award.

New recruits to CCBN include two postdoctoral fellows, two faculty and 15 graduate students. To operate the newly acquired infrastructure, seven technical staff were recruited. The ability to do more innovative work and to hire new faculty and staff will undoubtedly increase grant funding from both federal and provincial agencies.

Institution: University of Lethbridge

Funding Partners: Canada Foundation for Innovation, University of Lethbridge

ASRIP Funding: $272,429

Total Project Cost: $770,780

Visit the Bryan Kolb research page for more information.

Dr. Harvey Krahn

Campus Alberta Research Data Centres

Working together under the framework of Campus Alberta, the University of Alberta and the University of Calgary each established a Statistics Canada Research Data Centre (RDC) in 2000. The University of Calgary participated with five other universities across Canada in a Canada Foundation for Innovation application. The University of Alberta was the lead institution on behalf of both Alberta universities for provincial funding.

The Alberta RDC infrastructure consists of (in each university) a 2000 square-foot renovated workspace housing an electronic data storage and analysis enclave that complies with Statistics Canada standards for high security. Located in the library at both universities, these facilities are equipped with high-end computing workstations, a local area computing network and central file server, and licensed copies of a wide range of analytic and statistical software.

The development of the RDC network opened up this remarkable data resource to the Canadian academic community. A formal mechanism was created whereby researchers could now submit proposals to Statistics Canada requesting access to these confidential data. In each RDC, a Statistics Canada employee, who is responsible for all activities within the Centre, examines all analysis output to ensure that no confidential information is removed from the Centre.

Operating expenses have been covered by the universities, Statistics Canada, several provincial government grants and an annual grant from the Social Sciences and Humanities Research Council (SSHRC). The presence of the RDCs on university campuses, including the University of Alberta and the University of Calgary, has also meant that individual researchers have been more successful in obtaining grants and contracts to complete their personal research program.

The development of the RDC network has clearly led to many opportunities for graduate student training and for improved recruitment and retention of faculty members and graduate students. Since 2000, over 600 graduate students have worked on RDC projects across Canada. Some were working on thesis or dissertation projects, while others were employed as research assistants. Many graduate students with RDC experience have continued on in academic careers, but many have also found excellent jobs in various federal and provincial departments (such as finance, education, and health).

The network has facilitated 36 Data Training School workshops in six different universities. In Alberta, five workshops were delivered between 2004 and 2006 at the University of Calgary and the University of Alberta. These Western Data Training Schools attracted close to 100 graduate students and faculty members from across western Canada over the three-year period.

As of October 2007, over 1,040 analysis projects had been approved in the national RDC network. These projects have been carried out by over 1,230 academic researchers and 630 student researchers across the nation. Since 2001, research conducted in the University of Alberta RDC has led to 27 refereed journal articles and commissioned research reports, seven successful dissertations or theses, eight published conference presentations, and seven government working papers.

Institution: University of Alberta

Funding Partners: Statistics Canada, University of Alberta, University of Calgary

ASRIP Funding: $685,316

Total Project Cost: $1,370,638

Visit the Harvey Krahn or the RDC research page for more information.

Dr. Frank Jirik

Analysis of Gene Regulation and Function Using Transgenic Model Systems

Dr. Jirik's research involves the laboratory study of genes via the use of transgenic mice and frogs. His research promises to contribute to a better understanding of musculoskeletal and cardiovascular diseases and their response to pharmacological intervention. Specifically, the infrastructure supports and facilitates Dr. Jirik's research in the areas of prion biology and genetics, inflammatory arthritis, cancer, and bone disease.

To facilitate the research, ASRIP's infrastructure grant funded: 1) an aquatic cultivation system used for the maintenance of a frog colony; 2) a real-time PCR system (Lightcycler) to be able to assess gene expression levels in small samples of cells or tissues; 3) a telemetry system with computer to record physiological events (temperature, mobility, etc.) in transgenic mice; 4) a microtiter-plate-reading fluorometer for a variety of cell- and cell lysate-based fluorescence assays; 5) a cytospin centrifuge for cell biology assessments and immunohistochemistry analysis; and 6) an automated cell counting and viability/cell death assessment instrument for investigation of cultured cell populations.

The main elements of the infrastructure are the amphibian holding system, the real time PCR instrument, cell viability assay system, and the mouse telemetry system, which are all now operational. The amphibian holding system is essential for the production of transgenic amphibians (Xenopus tadpoles); and the availability of this infrastructure enabled the research team to collaborate with the pufferfish genome group in Singapore headed by the Nobel prize winner Dr. S. Brenner, and another key scientist, Dr. B. Venkatesh. This collaboration resulted in a 2004 publication, which demonstrated the feasibility of dissecting pufferfish gene promoters in transgenic frogs. Dr. Jirik's research group has earned an international reputation in gene regulation and is one of only two labs in the world to carry out such studies. The real time PCR enables the team to evaluate gene expression and it is anticipated that this state-of-the-art equipment will contribute to many innovative discoveries.

A new initiative to study the genetics of prions has been launched. Components of the infrastructure will be used to support the Mouse Prion Initiative, a research program under the directorship of Dr. Jirik. Prion diseases (or transmissible spongiform encephalopathies, such as BSE) are being studied for their pathogenesis, diagnosis, prevention, and treatment. Also of importance is an understanding of the function of the normal prion protein, and the genes that might control susceptibility to, or severity of, prion disease.

The infrastructure can be used in a wide variety of different/interdisciplinary projects, supports multiple research activities within the laboratory – and as such promotes the ability to acquire and retain grant funding. The other important component is the training of new researchers in Alberta using contemporary instrumentation and technologies.

The infrastructure has also supported a collaboration between the University of Calgary and the National University of Singapore; and between the University of Calgary and the Cross Cancer Institute in Edmonton.

Institution: University of Calgary

Funding Partners: Canada Foundation for Innovation, University of Calgary

ASRIP Funding: $127,100

Total Project Cost: $317,754

Visit the Frank Jirik research page for more information.

Dr. Elizabeth Crown

Protective Clothing and Equipment Research Facility

Dr. Betty Crown's research focuses on design and evaluation of clothing to protect industrial, military and firefighting personnel in such events as flash fires and airplane crashes, and includes evaluation of the static electrical properties of protective clothing systems. Her work on chemical protective clothing focuses on design and evaluation of clothing for protection of workers against pesticides and other agricultural chemicals, and also addresses issues of clothing decontamination.

The Protective Clothing and Equipment Research Facility (PCERF) at the University of Alberta is one of the top three protective clothing laboratories in the world. The project comprises a state-of-the-art flash fire simulation/instrumented mannequin facility, equipment for fundamental material combustion studies and heat/mass/moisture transfer studies, equipment for research on static electricity in materials, and a body scanner for studies of the effects of garment style and fit on thermal protection and comfort. As a separate purchase with these funds, a washer/extractor was bought, enabling the research team to more readily and appropriately prepare garments for testing on the PCERF's mannequin system as well as an upgrade to the body scanner to better facilitate modeling of the effects of air gaps on heat transfer.

Dr. Crown's research group is conducting projects for/with private sector firms from Canada and from other countries. They have secured several public sector and not-for-profit partners, both in Canada and in the USA.

Three patents are held on materials developed by one partner in collaboration with one of Crown's team members. In addition, they have taken a lead role in the development of an ISO (International Organization for Standardization) standard on instrumented mannequin testing and major revisions to ASTM (American Society for Testing and Materials) standards. Canada's role in the development of these standards places Canadian firms (both producers and users of protective clothing) in a good position because they are among the first in the world to have access to such evaluation protocols, enabling them to develop or use products meeting international standards.

Canadian workers benefit from the standards mentioned above and from improved protective products in their workplaces. The PCERF has also helped to keep unsafe products off the market. Two Health Canada product safety regulations were developed to help protect consumers as a result of product testing at the facility. Wildland firefighters in the USA and some in Canada have benefited from improved fire shelters that were the product of testing at the PCERF.

The PCERF has provided a rich environment for the training of students. This facility has greatly increased the ability of graduate students to conduct research on fundamental issues, thus facilitating advanced opportunities for doctoral students.

Although Dr. Crown's research group is small, the facility has attracted three new researchers to the team at the University of Alberta, two from outside of Canada. They have also recruited excellent staff to work in the facility: currently a graduate engineer, three graduate textile scientists and several graduate students.

Institution: University of Alberta

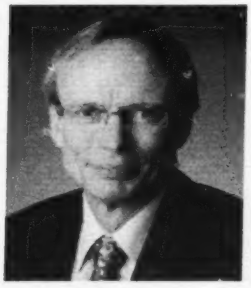
Funding Partners: Canada Foundation for Innovation, University of Alberta, University of Manitoba, University of Saskatchewan

ASRIP Funding: $537,462

Total Project Cost: $1,462,301

Visit the Protective Clothing and Equipment Research Facility web page for more information.

Dr. William McBlain



Phase 1 Clinical Trials and Research Unit

This award supported the Clinical Investigation Unit upgrade at the University of Alberta Hospital to make it fully equipped to conduct phase 1 clinical trials and early phase II trials. The new unit can accommodate up to twelve patients at a time. This infrastructure completes their capacity-building so that the University of Alberta, in collaboration with Alberta Health Services, will be able to conduct all phases (I to IV) of clinical trials. This capacity creates a unique opportunity to carry out early-phase clinical trials for multi-national pharmaceutical manufacturing companies and spin-off biomedical companies that are based in Alberta and Western Canada.

The project costs included the purchase of networked physiological and clinical monitoring equipment, the expansion of capability to process and store human blood and other samples, and minor renovations to make the unit more efficient and cost-effective for its intended purpose. The unit should be considered as a Provincial and Western Canadian resource, preferentially made available to researchers and biomedical companies within the Province of Alberta. The areas of genomics, proteomics, and designer molecules benefit greatly from the support of a phase 1 clinical trials unit.

As the Unit reaches capacity and trainees are engaged in its function, formal courses will be organized through the University of Alberta Faculty of Medicine and Dentistry, and/or through the Faculty of Extension. The hands-on training will be done through the Northern Alberta Clinical Trials and Research Centre. The phase 1 unit will provide an excellent on-site training opportunity to those who wish to secure a career in clinical trials and clinical research, particularly nurses and other health sciences students (undergraduate and graduate, including specialty residents and sub-specialty fellows). The addition of the phase 1 unit will assist the research team to train their own students to meet internal demand for the recruitment and retention of personnel and for the needs of the rest of Canada.

The phase 1 unit will enhance first-in-man testing and strengthen existing research collaboration and will create new research alliances among scientists, clinician scientists, pharmaceutical companies and biotechnology companies. A first-in-man study is a clinical trial where a medical procedure, previously developed and assessed through in vitro or animal testing, or through mathematical modelling is tested on human subjects for the first time. The unit is located in a leading academic health centre where there is a very high level of expertise in all aspects of medicine, an immediate access and proximity to a prominent research intensive university where many scientists are of international fame, and where there is an excellent patient base. In addition, the faculty members have a long track record working with pharmaceutical and industrial partners around the globe. A significant number of spin-off biotech companies are also linked to the University.

The creation of the Phase 1 Clinical Trials Facility will develop a strong bioeconomy in the future. It will help to attract scientists, clinician-scientists, and pharmaceutical and biotechnology companies to Alberta. Initially, this unit will provide employment for about 30 individuals and it is predicted that 35 nurses and other trainees will be recruited on an annual basis because of the availability of the infrastructure.

Institution: Capital Health Authority and the University of Alberta

Funding Partners: University of Alberta, Alberta Health Services

ASRIP Funding: $152,500

Total Project Cost: $363,932

Visit the The Northern Alberta Clinical Trials and Research Centre website for more information.

Dr. Raymond Egerton

Ion Beam Laboratory for Nanoscale Materials Processing and Patterning

The infrastructure purchased via ASRIP and other sources consisted of optical instruments and components for measuring the absorption, fluorescence, and microstructural properties of patterned thin film nanocrystal specimens, an ion milling instrument for cross-sectional thin film specimen thinning, a source for an ion beam system, and a high-temperature research furnace for annealing thin films. The work has led to the development of trial device structures based on silicon nanotechnology (ICT-related) and is showing promise for future developments in this area.

Much work has been done with the ASRIP-funded equipment concerning the optical properties of nanoscale silicon. This work has led to publications in numerous journals in the field of nanoscale science and technology, and the researchers are currently attempting to develop intellectual property based on this research.

The new infrastructure has enhanced research training and allowed researchers to be more collaborative, and interdisciplinary. Students working in this lab have gone on to many different career paths, including working full time jobs at national labs, two local technology companies, another University, and one of the students has just accepted a postdoctoral fellow position at one of the highest-ranked US schools. The diversity of these different job areas indicates the general collaborative and interdisciplinary nature of the project: additionally, researchers have had users on ASRIP-funded equipment that have come from several departments and faculties including Physics, Chemistry, and Engineering.

Recruitment of students has been going very well, with new students joining the group yearly. Students in Dr. Egerton's lab have won numerous awards and in general have had success in finding jobs in the university, labs, or, high-tech sectors. The researchers have many scientific publications in highly-ranked scientific journals. Intellectual property is possible in the very near future.

Collaborations in Dr. Egerton's lab have involved researchers from different departments and faculties, and these collaborations have resulted in joint scientific publications and two patent applications. Collaborations with researchers in Hong Kong, have resulted in several scientific publications. Also the research currently involves collaborations with two local high-tech companies.

The impact of the ASRIP funded infrastructure on the sources and on the amount of research funding obtained by the researchers has been great. ASRIP funded equipment has made it possible for the science to be done that is required to attract sponsored research funding.

Institution: University of Alberta

Funding Partners: Canada Foundation for Innovation, University of Alberta, Axion Corporation

ASRIP Funding: $199,575

Total Project Cost: $661,853

Visit the R.F. Egerton research page for more information.

Dr. Kewal Dhariwal

Creation of Research Institutes for the Study of Supply Chain Collaboration

Supply chain management is the planning and coordination of the flow of materials and services from their source to the user as an integrated system. In the past the management of this flow occurred as a series of independent activities, usually confined to individual companies. Increasingly, emphasis is being given to cooperative management of the whole system or 'the supply chain' so that customer service is improved and costs are reduced.

This research infrastructure grant was used to create a Supply Chain Simulation Laboratory. The research conducted within this simulation environment was designed to enable experimentation with tools that support collaboration between supply chain participants so that this might take place more effectively. The infrastructure enabled careful monitoring and control of activity within this environment.

Under the direction of the researchers, the activities in the simulated environment were conducted by employees of partner companies. This participation took place via the internet, from the desktops of the employees at their place of work. In the game 'Collaborative Conceptual Change', teams of players took on various roles in an international supply chain management, which simulates real business conditions and costs.

The Supply Chain Simulation Laboratory enabled senior and middle management employees in companies competing within an internationally competitive environment to learn collaborative and interdisciplinary skills. There were enhanced research training opportunities for researchers and new research scenarios were created. Computer students studying complex role behaviours in order to build intelligent software agents were able to analyze the behaviour of role members and construct computer models to replicate those behaviours. Students, professors and professionals in industry became more collaborative through an increased understanding of the value of sharing data via integrated information systems.

As a result of the investment, the University and its research partners were able to improve recruitment and retention of personnel and attract more research dollars from industry in Canada and the USA. Researchers in Alberta, Ontario, Quebec and Manitoba, New Brunswick, New York, Washington and England were able to collaborate on the various research efforts. Research collaborations and partnerships with the public and private sector were created, notably with: Alberta Transportation, NAIT, GMCC-International Business & Supply Chain Management; Center for Innovative Management; University of Montreal; York University; Waterloo University; and Lancaster University.

Between 110 to 125 people were trained on the Supply Chain Simulation Laboratory over the seven years it has been in operation. This is a world class simulator as assessed by professors, industry professionals and students. The availability of this facility has spurred innovation in the development of industry applications and simulations. Areas of future research include: Social Research (behaviour and learning of participants); Optimization of operations – Engineering & Management Science; Business Process Improvement and the value of sharing information – Business and International Management.

Institution: Athabasca University

Funding Partners: Canada Foundation for Innovation, IBM, SAP Enterprise Software and Training

ASRIP Funding: $210,000

Total Project Cost: $2,423,000

Visit the Kewal Dhariwal research page for more information.

Alberta Science And Research Investments Program Project List 2000-2008

Project Number	Project Title	Descriptive Summary	Primary Investigator	Lead Organization	Total Project Cost	ASRIP Funds Approved	Key Strategic Area
01-151	Creation of a Research Institute for the Study of Supply Chain Collaboration	An outline supply chain simulation environment within which researchers will engage in collaborative research with the business community. Using broadband technology, the aim is to understand and apply collaboration technology, both within an individual business and business to business.	Dhariwal, Kewal	Athabasca University	$2,423,000	$210,000	Other/ Multi-discipline
01-041	Solid-State Nuclear Magnetic Resonance Facility	A state-of-the-art NMR facility for the investigation of solid materials. This facility will have a major impact on the research programs of several researchers in the physical sciences area and will serve as an important training ground for graduate students.	Wasylishen, Roderick E.	University of Alberta	$1,400,000	$650,000	Other/ Multi-discipline
01-045	Bamfield Marine Station - Infrastructure For Studies In Biodiversity and Bio-environmental Fluid Dynamics	Bamfield Marine Station will utilize infrastructure to support new research activities in the ecosystem time series and biodiversity studies of Barkley Sound, and bio-environmental fluid dynamics.	Spencer, Andrew N.	University of Alberta	$3,046,755	$300,000	Life Sciences
01-047	Understanding Land Cover Through a Strategic Infrastructure Development	The primary outcome of this proposal is the development of infrastructure that enhances our current abilities to process, store and manipulate extremely large imagery and related data, and data sets linked to provincial, national and international initiatives.	Sanchez-Azofeifa, Arturo	University of Alberta	$898,478	$350,000	Life Sciences
01-048	Precision Ranching	Sustainable landscape and animal management systems. New and emerging technologies will be used to study complex spatial and temporal interactions among fauna, flora, climate, soils, topography and human factors and their response to management options.	Price, Mick A.	University of Alberta	$1,137,300	$350,000	Life Sciences

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01-049	Meanook Biological Research Station (MBRS) Enhancement Proposal	MBRS is a year-round facility supporting critical research efforts to further the efficient and sustainable management of Canada's boreal forest. The award will expand the research capabilities of MBRS with the addition of a chemical lab and computing facilities housed in a new building.	Hannon, Susan	University of Alberta	$670,000	$287,500	Life Sciences
01-050	Molecular Characterization of Cancer Cell Populations by Single Cell and Living Cell Analysis	Funds for a laser microdissector and robotic microtweezers to isolate/ manipulate cells or subcellular regions. Multi-user laser-assisted technologies permit correlation of molecular properties with cell function, morphology and position within a cancer mass - a detailed analysis of fresh human tissue specimens is not otherwise possible.	Pilarski, Linda M.	University of Alberta	$1,782,244	$533,000	Life Sciences
01-055	Geochemical Analytical Facility	The facility will provide chemical analysis for multidisciplinary research on assessment and remediation of contaminated sites. Users from science and engineering will have access to much less expensive analysis for their research projects allowing increased analytical capability for enhanced data gathering.	Donahue, Robert	University of Alberta	$667,100	$295,000	Energy
01-059	Infrastructure for Surface Mining Research Laboratory	Infrastructure and facilities will achieve excellence in surface mining research and attract highly qualified researchers. They will maintain sustainable research programs to advance knowledge and frontiers in mining engineering, with impact on industry, Alberta and Canada.	Szymanski, Jozef	University of Alberta	$2,000,000	$660,000	Energy
01-061	Electronic Data Infrastructure Upgrade	A major upgrade of the networks, servers, and data security systems within the Department of Chemistry. Enhancements include faster networks, larger and faster servers, security systems designed to ensure data integrity.	Horlick, Gary	University of Alberta	$459,079	$200,000	ICT

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01-063	Campus Alberta Research Data Centres	This project is part of a network of regional research data centres, providing secured access to select confidential data files from Statistics Canada. The Research Data Centres program is operational at thirteen universities and has smaller branches at six other universities.	Krahn, Harvey	University of Alberta	$1,370,638	$685,316	ICT
01-066 Project Cancelled	Network Enabled Smart Robotic Systems	More advantageous deployment of robotics, sensing & network technologies in areas of community health, environment and resources in Alberta demands the need for a laboratory focused on advancing new ways of integrating fundamental research in these areas.	Meng, Max	University of Alberta	$2,029,683	$300,000	ICT
01-070	Whole Body Calorimetry	This initiative will result in development of a whole body calorimetry room at the U of A dedicated to accurate measurement of energy metabolism in humans. The unit will enable researchers to investigate mechanisms of energy utilization throughout the human life cycle and in various disease states.	McCargar, Linda	University of Alberta	$770,000	$350,000	Life Sciences
01-162	Phase I Clinical Trials and Research Unit	Medical unit for in-patient clinical trials and research. Purchases include a monitoring equipment-central station, a network of 16 peripheral physiological monitors, replacement of equipment for processing and storage of blood and samples, and minor renovations.	McBlain, William	University of Alberta and Alberta Health Services	$363,932	$152,500	Life Sciences
01-102	Gene Therapy Initiative - the University of Calgary	Recent advances in biotechnology have made it possible to deliver foreign genes into cells for the treatment of human diseases. The purpose of this project is to establish a facility that will allow researchers to develop gene therapy.	Wong, C.W.	University of Calgary	$2,366,142	$600,000	Life Sciences
01-105	Nutrition, Genetics and Human Performance	Newly-equipped labs in the Faculty of Kinesiology toward the investigation of genetic risk factors and health status of elite athletes. In collaboration with the Faculty of Medicine, the team shares core technologies, enhanced recruitment and scientific interaction on this emerging health science.	Gravel, Roy	University of Calgary	$8,527,202	$3,256,247	Life Sciences

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01-111	Multicomponent Seismic Data Acquisition System	A system for time-lapse monitoring of CO_2 injection and other acid gases in depleted hydrocarbon reservoirs and deep aquifers in Alberta. Geological sequestration of CO_2 is a viable technology for the reduction of greenhouse gas emissions.	Lawton, Don C.	University of Calgary	$3,399,512	$1,160,000	Energy
01-113	Language Research Facility	A facility for psycholinguistic experimentation on second language acquisition in adults and its implications for improvement of technology-enhanced language instruction, for curricular and teacher development, and for general policy issues related to second or heritage languages.	Archibald, John	University of Calgary	$1,077,750	$430,000	Other/ Multi-discipline
01-120	Genetics and Developmental Biology Laboratories	Establishment of the Genes and Development Research Group and the construction of a blend of individual labs without walls and specialized research facilities, (e.g. microsurgery, viral gene transfer, digital imaging). These facilities, coupled with the outstanding investigator group, will enhance Alberta's efforts in gene therapy.	Weiss, Samuel	University of Calgary	$1,066,900	$190,000	Life Sciences
01-123	Integrated Centre for Advanced Materials Characterization	The acquisition of this instrument will serve to further strengthen our interdisciplinary research in areas such as the development of new solids, thin films, and polymers.	Birss, Viola I.	University of Calgary	$1,700,373	$490,000	Other/ Multi-discipline
01-125	Research Capability Upgrade of the Rothney Astrophysical Observatory	Instrument upgrade to remain competitive, train students in cutting edge astronomical instrumentation and observation. Improve infrared imaging through enhanced infrared and optical imaging cameras and controllers, spatial resolution through tip/tilt adaptive optics, improved efficiency through automation of telescopes.	Milone, E.F.	University of Calgary	$552,000	$175,000	Other/ Multi-discipline

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02-044	NMR, GC-MS and computational tools to support research programs in chemistry and biochemistry	Core research tools for explaining chemical structures and understanding reaction pathways. Acquisition of spectroscopic, chromatographic, and computational equipment will support research and collaborations with industry and international scientists.	Mahaffy, Peter	King's University College	$665,009	$200,000	ICT
02-043	Advanced infrared physics laboratory	Advanced infrared physics laboratory for the development and calibration of radiometers and spectrometers for remote sensing.	Naylor, David	University of Lethbridge	$197,500	$79,000	Other/ Multi-discipline
02-080	Canadian Centre for Behavioural Neuroscience	Major equipment items include attachments for 500 MHz NMR to allow *in vitro* imaging of rats and mice, electrophysiological equipment and behavioural equipment.	Kolb, Bryan	University of Lethbridge	$770,780	$272,429	Life Sciences
02-125	The Banff International Research Station for Mathematical Innovation and Discovery (BIRS)	A collaborative Canada-US-Mexico venture to operate an international centre for the mathematical sciences and its applications. Infrastructure is for a computer network and essential renovations to the Banff Centre.	Nutt, Art	The Banff Centre	$1,507,778	$500,000	Other/ Multi-discipline
02-045	Spindle Position and Checkpoint Control During Mitosis	Research into the mechanisms for nuclear and spindle positioning and the signaling pathways controlling cell division.	Adames, Neil	University of Alberta	$530,220.00	$212,088	Life Sciences

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02-046	Laboratory for Colloids and Complex Fluids	A laboratory to investigate and control the properties of complex fluids, such that are found in oil sands processing, wastewater treatment, pulp and paper manufacturing and biological fluids.	Bhattacharjee, Subir	University of Alberta	$312,500	$125,000	Energy
02-047	High-Capacity Digital Communications Lab	A research laboratory to facilitate design, simulation, implementation and testing of high capacity, high reliability digital communications systems.	Schlegel, Christian	University of Alberta	$312,500	$125,000	ICT
02-058	Nanofabrication Facility	The facility will significantly extend the capabilities of the existing open-access Microfab to that of the best in Canada. Enables innovative research in nano-biotechnologies, nanoscience, and nanomaterials in ICT, health, and resource sectors.	Brett, Michael	University of Alberta	$8,247,533	$3,082,460	Other/ Multi-discipline
02-060	Protective Clothing and Equipment Research Facility	An enhanced flash fire simulation, instrumented mannequin facility, and equipment for fundamental material combustion studies, combined heat, mass and moisture transfer studies and ultra-violet protection research.	Crown, Elizabeth	University of Alberta	$1,462,301	$537,462	Other/ Multi-discipline
02-062	Centre for Comparative Psycholinguistics	Enables the multifaceted psycholinguistic study of language representation and processing among speakers of indigenous and minority languages.	Libben, Gary	University of Alberta	$743,685	$297,474	Other/ Multi-discipline

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02-066	Westgrid: The Western Canada Research Computing Grid	An integrated system of high-performance computing facilities, data storage capability, collaborative work sites, high-speed networks, and human resources that together provides a unique shared research infrastructure designed for and by research groups across Alberta and British Columbia.	Schaeffer, Jonathan	University of Alberta	$40,571,910	$5,995,420	ICT
02-067	Tailings Research Facility	The facility comprised of delivery, treatment and deposition modules carries out research to develop novel and innovative approaches to treating tailings to reduce the environmental impact of the bitumen extraction.	Sego, David C.	University of Alberta	$2,000,000	$500,000	Energy
02-068	Facility for Study of Effectiveness of Collaborative, Distributed Software Development	To support research on how software can be conceived, developed and maintained collaboratively in distributed locations. Special focus is on heterogeneous development environments, embedded systems, and software product lines.	Sorenson, Paul	University of Alberta	$1,654,174	$546,350	ICT
02-069	High-Field MR for Biological Image-Guided Tomotherapy	A high-field (3T) MR system to develop biological tumor targeting for adaptive tomotherapy, and to study the subsequent metabolic and biochemical treatment effects on tumors and healthy tissues.	Fallone, Gino	University of Alberta	$9,776,300	$3,846,000	Life Sciences
02-083	University of Alberta Heart & Stroke Research Centre	A transnational human vascular biology research facility for the new Mazankowski Alberta Heart Institute. It will study the effects of heart attacks and strokes, and houses state-of-the-art cardiovascular imaging tools, basic science core labs, a gene therapy facility and an outcomes research centre.	Lopaschuk, Gary	University of Alberta	$16,613,301	$3,244,910	Life Sciences

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02-091	Project CyberCell - Proteomics, Metabonomics and Functional Genomics Experimental Component	To quantitatively determine the dynamic and structural nature of cellular processes in *E. coli*, with the ultimate goal of recreating the living cell computationally. This is a joint project from the Universities of Alberta, Calgary and Lethbridge.	Weiner, Joel	University of Alberta	$17,454,775	$4,700,000	Life Sciences
02-105	Alberta Centre for Surface Engineering and Science (ACSES)	An integrated facility for surface characterization and modification, supporting interdisciplinary research throughout Alberta. Essential instruments previously not available or not generally accessible within the province are provided.	Ivey, Doug	University of Alberta	$13,163,230	$4,000,000	Energy
02-107	The University of Alberta Protein and Gene Discovery Centre	New technology and facilities for research in high-throughput chemical genetics, genomics and proteomics.	Harrison, D. Jed	University of Alberta	$9,840,289	$1,800,000	Life Sciences
02-108	Modern Infrastructure to Support Inter-disciplinary Water Chemistry in the 21st Century	Research in industrial impacts on environmental and human health. Included are a freshwater biogeochemistry laboratory facility, and three fully gauged and monitored experimental catchments in boreal plains, foothills, and alpine locations in Alberta.	Schindler, David	University of Alberta	$9,630,188	$1,400,000	Life Sciences
02-109	Alberta Cooperative Conservation Research Unit: Infrastructure for Studies in Conservation Science	The Unit functions as a central 'umbrella' for research innovation including biomonitoring, landscape and population modeling, and application of telemetry, GPS, GIS and DNA fingerprinting to resource management.	Samuel, William M.	University of Alberta	$2,483,826	$320,000	Life Sciences
02-121	Ion Beam Laboratory for Nanoscale Materials Processing and Patterning	A combined facility for advanced ion implementation and optical and nanostructural characterization.	Egerton, Raymond	University of Alberta	$661,853	$199,575	Life Sciences

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02-088	Creation of the Alberta Diabetes Research Centre (ADRC)	A state-of-the-art multidisciplinary diabetes research facility. This research centre will provide Alberta with the infrastructure and resources needed to maintain and expand its existing diabetes research excellence.	Rajotte, Raymond	University of Alberta	$39,832,358	$6,000,000	Life Sciences
02-090	Centre of Excellence for Viral Hepatitis Research	A multidisciplinary centre which builds and equips new space (13,250 sq. ft.) including animal facilities, provides equipment for existing laboratories, expands our tissue bank and establishes a node in a national database for viral hepatitis.	Tyrrell, D. Lorne	University of Alberta	$9,264,007	$2,000,000	Life Sciences
02-048	Large Scale Tissue Culture and Bioreactor Facilities for Biomedical and Biochemical Engineering Research	Infrastructure for the Pharmaceutical Production Research Facility including computer controlled bioreactors and fluorescence microscopy equipment.	Behie, Leo	University of Calgary	$378,830	$151,532	Life Sciences
02-049	Cellular Mechanobiology and Surgical Simulation in Orthopedic Bioengineering	Research into invertebral disc degeneration and osteoarthritis including tissue engineering and the development of surgical simulations.	Duncan, Neil	University of Calgary	$428,897	$125,000	Life Sciences
02-050	Energy and Imaging	A laboratory where imaging techniques are used as tools to solve chemical and petroleum engineering problems.	Kantzas, Apostolos	University of Calgary	$650,000	$175,000	Energy

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02-051	Molecular and Cellular Biomechanics and Biomedical Engineering	Laboratories for molecular and cellular biomechanics and biomedical engineering research. The long-term aim of research in these facilities is to gain an understanding of musculo-skeletal growth, adaptation, healing and ageing.	Herzog, Walter	University of Calgary	$315,586	$123,078	Life Sciences
02-052	Analysis of Gene Regulation and Function Using Transgenic Model Systems	Equipment to expand the ability at the University of Calgary to carry out sophisticated types of phenotype analysis in transgenic animals.	Jirik, Frank	University of Calgary	$317,754	$127,100	Life Sciences
02-053	Medical Genetics Research Laboratory	Meiotic research infrastructure to understand mechanisms that affect the production of chromosomal abnormalities in human gametes.	Martin, Renee	University of Calgary	$313,572	$95,988	Life Sciences
02-054	Cellular / Molecular Biology Core Equipment	Equipment for the new Respiratory Research Group initiative on the molecular pathogenesis of inflammatory airway diseases. A major focus will be on defining the mechanisms underlying virally-induced exacerbations leading to asthma.	Proud, David	University of Calgary	$316,894	$125,000	Life Sciences
02-055	Studies on the Cause, Prevention and Cure of Type 1 Diabetes	Research to find the mechanisms involved in the initiation of beta cell specific immune responses and development of methods for the prevention of autoimmune diabetes. Additional plans are to develop a cure for type 1 diabetes by a novel insulin gene therapy.	Yoon, JiWon	University of Calgary	$640,000	$136,000	Life Sciences
02-056	Plant Metabolic Processes Biotechnology	Infrastructure for a laboratory engaged in research on the biochemistry, molecular biology, and biotechnology of plants.	Facchini, Peter	University of Calgary	$372,589	$143,590	Life Sciences

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02-057	RHODIUM: A Pentium Computer Ranch for Catalyst Design and Chemical Modeling	A facility to carry out modeling of catalytic processing through assembly of a multi-processing computer.	Ziegler, Tom	University of Calgary	$312,500	$125,000	ICT
02-075	Hybrid Passive-Active Lighting, Ventilation, and Thermal Systems for Commercial and Institutional Buildings	The project is a 200 m^2 full-scale building that would serve as a dedicated testbed for developing and evaluating innovative energy systems for buildings.	Love, James	University of Calgary	$348,000	$139,200	Energy
02-077	Experimental Laboratory for Internet Systems and Applications (ELISA)	The project provides network measurement equipment at the University of Calgary as part of a geographically distributed internet systems testbed shared with the University of Saskatchewan.	Williamson, Carey	University of Calgary	$3,078,704	$605,000	ICT
02-124	ICU CaRES Program	Infrastructure for the acquisition, cataloguing, and storage of human material necessary for the investigation of biological mechanisms of disease.	Winston, Brent W.	University of Calgary	$2,234,249	$165,000	Life Sciences
02-093	Broadband Network Reworking in Support of Bioinformatics and Imaging	Higher bandwidth connectivity is required by the Faculty of Medicine's life sciences researchers, especially those leading the ICT-intensive fields of bioinformatics and imaging, in order to remain competitive at the national and international level.	Sensen, Christoph	University of Calgary	$2,955,955	$800,000	Life Sciences

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02-096	Centre for Advanced Functional Imaging Studies	The development of a centre that performs molecular imaging. The 9.4 Tesla magnet and a future 10 Tesla magnet permits innovative, advanced research in the use of MR imaging to investigate disease and therapeutics in animal model systems.	Dunn, Jeff	University of Calgary	$23,657,302	$1,800,000	Life Sciences
02-097	Centre for Health and Policy Studies (CHAPS)	CHAPS will improve the health of Albertans and the efficiency of health care delivery in the Province. This innovation brings together core CHAPS disciplines of economics, population health, health policy analysis and health care utilization and involves close collaboration with related disciplines across the whole university.	Noseworthy, Thomas	University of Calgary	$1,656,825	$150,000	Life Sciences
02-098	Integrating Research in Osteoarthritis: From the bedside to the bench and back again	A consortium of musculoskeletal investigators from the faculties of Medicine, Engineering, Kinesiology, and Science, will integrate research efforts into osteoarthritis, a degenerative disease. Equipment will consolidate four facilities and two core resources to enable the necessary multidisciplinary, translation research.	Hart, David	University of Calgary	$12,710,038	$1,900,000	Life Sciences
02-100	Centre for mouse genetics, physiological systems and disease	Investigators will use genetic approaches in mice to model and understand normal development and disease in humans. They will conduct both high throughput mutation genes and analysis of complex mutant phenotypes, supporting Alberta's important national and international role in functional genomics research.	Cross, James	University of Calgary	$19,356,461	$2,900,000	Life Sciences
02-999	Athabasca University Geophysical Observatory	The geophysical observatory infrastructure consists of a state-of-the-art auroral all-sky imager. A ground-based magnetometer complements the imager by detecting the magnetic fields associated with the aurora.	Connors, Martin	Athabasca University	$294,200	$115,000	Other/ Multi-discipline

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04-021	Centre of Excellence for Gastrointestinal Inflammation and Immunity Research	The Centre will support a multi-disciplinary team of medical scientists in examining the environmental, microbial, immunological and genetic factors that cause the gastrointestinal disorders and related cancers that afflict 60 per cent of Canadians in their lifetime.	Fedorak, Richard	University of Alberta	$20,508,807	$4,605,013	Life Sciences
04-031	Cardiovascular Translational Research Centre	An innovative centre to facilitate the development of new therapeutic strategies to improve the outcome of cardiac surgery. The research has a strong translational focus, which will result in research advances being rapidly translated into optimal clinical care for the cardiac patient.	Lopaschuk, Gary	University of Alberta	$14,233,036	$2,500,000	Life Sciences
04-032	Integrated Nanosytems Research Facility (INRF)	The INRF will consist of four components that will encompass fabricating nanomaterials, the self-assembly and synthesis of molecules, nanoscale manipulation and the computing power to model, design and visualize nanosystems.	Lynch, Dean David	University of Alberta	$74,727,796	$4,883,118	Other/ Multi-discipline
04-033	Oil Sands and Coal Interfacial Engineering Facility	A state-of-the-art facility supporting research to develop step-out technologies in oil sands processing, bitumen extraction and upgrading, producing clean energy from coal, environmental impact minimization and improved water utilization. These issues are approached at the micro- and nano-scale and have the potential to revolutionize bitumen extraction and upgrading.	Masliyah, Jacob	University of Alberta	$5,853,787	$1,429,669	Energy

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04-036	Nanophotonics Microscopy Unit	A state-of-the-art laboratory for ultra-fine-scale characterization of fluorescent materials for nanotechnology. Research in this emerging field could lead to many applications in areas related to microphotonics and information technologies in which the special light-emitting properties of nanoscale semiconductors may play an important role.	Meldrum, Al	University of Alberta	$472,294	$152,000	Other/ Multi-discipline
04-037	Agricultural Genomics and Proteomics Centre	The infrastructure will enable the world-class researchers to identify genes and related proteins affecting processes in animal agriculture that are highly relevant to industry, including growth, waste production, and efficient nutrient utilization.	Moore, Stephen	University of Alberta	$3,372,758	$1,100,000	Life Sciences
04-042	Field Facility to Support Ecosystem Management Emulating Natural Disturbances	The research seeks to understand the impact forest harvest has on forest habitats, biodiversity, and forest regeneration in an effort to optimize forest management in relation to costs and long-term benefits.	Spence, John	University of Alberta	$595,028	$223,740	Life Sciences
04-044	Project to Restore Movement	A range of brain stimulation equipment that will place the project at the very forefront of non-invasive study of brain function. The overall goal is to understand the normal control of movements and to use this knowledge to enhance and restore movements to people with motor disabilities resulting from strokes, accidents and other causes.	Stein, Richard	University of Alberta	$4,413,635	$510,600	Life Sciences
04-051 Project Cancelled	Canadian Molecular Cytogenetics Platform: Health Technology Assessment Facility	A national consortium of researchers and clinicians studying the application of advanced molecular cytogenetic technologies. Cytogenics is a unique diagnostic tool that can identify abnormalities in an individual's genome that can cause birth defects, developmental delay, mental retardation, growth abnormalities, infertility, recurrent miscarriages and cancer.	Tomkins, Darrell	University of Alberta	$11,282,309	$47,714	Life Sciences

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04-063	Canadian Pain Trials Network	The goals are to create new therapies, build a national pain database, develop health policies to reduce the incidence of pain, decrease its socioeconomic impact and maximize opportunities for commercialization. The network will coordinate multi-centre clinical trials for the development of novel therapies, and develop an innovative clinical research training program.	Taenzer, Paul	University of Calgary	$55,469	$22,507	Life Sciences
04-067	Institute for Inflammatory Diseases: A common focus for the improvement of health	The Institute brings together the facilities and researchers to develop new strategies for prevention and treatment of inflammatory disease that will lead to improved quality of life and reduced mortality, while marketing drug discoveries and creating knowledge-based jobs.	Kubes, Paul	University of Calgary	$18,629,196	$2,009,943	Life Sciences
04-068	Project neuroARM: MR compatible image guided robot for microsurgery	Development of an innovative medical robot system designed to enhance human-guided, robot microsurgery through magnetic resonance image (MRI) guidance, tremor elimination and increased spatial resolution.	Sutherland, Garnette	University of Calgary	$30,000,357	$3,000,000	Life Sciences
04-069	Brain, Behaviour and Cognitive Science Imaging Facility	The expansion of the Canadian Centre for Behavioural Neuroscience (CCBN) will allow researchers to take full advantage of the equipment and collaborations by bringing together researchers from Psychology, Neuroscience, Biology and Biochemistry to tackle the main research themes at the CCBN: spatial cognition and memory, motor control, neurological disorders (e.g., Parkinson's disease, fetal alcohol syndrome, and stroke), drug addiction and brain plasticity.	Kolb, Bryan	University of Lethbridge	$2,865,272	$933,082	Life Sciences

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06-317-RI	Alberta Institute for Viral Immunology (AIVI)	The infrastructure funded will create biosafe and biosecure laboratories where innovative research may generate insights into how viruses infect cells and cause disease, and how immune defenses provide protection from these diseases. Design details include safe places to store, incubate and dispose of viruses; unique plumbing to ensure the water supply is protected; and specially designed robots that handle hazardous liquids and plates.	Evans, David	University of Alberta	$24,926,384	$6,941,811	Life Sciences
06-320-RI	Alberta Centre for Prions and Protein Folding Diseases (ACPPFD)	The funding will support research activities into prion diseases and other diseases of protein folding through initiatives such as developing technology options for the rapid detection and potential treatment of BSE in cattle and the design of prion decontamination systems for water, land, laboratories, etc.	Rachubinski, Richard	University of Alberta	$12,137,665	$4,855,066	Life Sciences
06-327-RI	Creation of the Alberta Transplant Applied Genomics Centre (ATAGC)	The centre will integrate clinical and basic research and use complex gene technology to improve disease diagnosis both before and after transplants. The investment will help researchers better understand disease processes, improve patient care, and enhance teaching and training opportunities and will result in health benefits for Albertans and people around the world.	Halloran, Philip	University of Alberta	$12,661,021	$4,134,936	Life Sciences
06-329-RI	Ultrafast Nanotools Laboratory	The award will be used to purchase infrastructure for an integrated grouping of instruments to help researchers understand the nature of nanomaterials, and develop novel techniques for measuring the speed of nanodevices. The lab will be unique in the world, attracting leading researchers to Alberta and providing support and trainees to Alberta nanotechnology companies in the emerging market of microwave nanodevices.	Hegmann, Frank	University of Alberta	$3,178,702	$975,000	Other/ Multi-discipline

Project Number	Project Title	Descriptive Summary	Primary Investigator	Lead Organization	Total Project Cost	ASRIP Funds Approved	Key Strategic Area
06-355-RI	Canadian Centre for Isotopic Microanalysis	Canadian Centre for Isotopic Microanalysis – The facility will enable more detailed and accurate imaging and analysis of non-renewable resources than is currently available in Canada. The research team will investigate methods of mining diamonds and other minerals while helping to reduce the environmental impacts of resource development and enhancing Canada's competitiveness as a world supplier of hydrocarbon and mineral resources.	Stachel, Thomas	University of Alberta	$13,215,959	$4,447,595	Energy
06-365-IS	Nanofabrication Facility Expansion	The award will be used to purchase equipment for the Micromachining and Nanofabrication Facility (NanoFab), to meet the needs of more than 550 researchers, industry and government. With this new infrastructure, Alberta will be home to one of the top five such laboratories in North America. NanoFab's open-access operational model brings together researchers from diverse disciplines, institutions, and companies in one location, maximizing opportunities for new research ideas and products through previously unlikely collaborations.	Brett, Michael	University of Alberta	$5,264,699	$2,062,672	Other/ Multi-discipline
06-350-RI	Gene Silencing and Sequencing Facility	Funding will strengthen the technological services provided by this one-of-a-kind facility in Canada and allow economies of scale – making large projects affordable and contributing to innovative research on: cancer treatment, stem-cells, prion disease, genetic risk factors, and the immune system. The research offers the promise of a new generation of more effective drugs to combat genetic diseases.	Pon, Richard T.	University of Calgary	$800,434	$320,174	Life Sciences

Project Number	Project Title	Descriptive Summary	Primary Investigator	Lead Organization	Total Project Cost	ASRIP Funds Approved	Key Strategic Area
06-367-IS	In-Situ Upgrading: The Next Generation Technology for Canada's World Class, Oil Sands Energy Resources	Infrastructure for the continued development of new *in-situ* upgrading techniques that utilize ultradispersed nanocatalysts to efficiently extract a medium quality crude oil directly from the earth. The *in-situ* recovery technologies will reduce natural gas consumption, address environmental concerns and create new value-added products.	Pereira Almao, Pedro	University of Calgary	$23,335,814	$6,026,791	Energy
06-369-IS	Advancing Intraoperative MRI (iMRI)	State-of-the-art upgrades to the iMRI system will allow for safer brain surgery and expand imaging capabilities to include surgical guidance and monitoring for the entire body so surgeons can more accurately plan the surgical corridor while minimizing trauma to the patient.	Sutherland, Garnette	University of Calgary	$10,448,367	$4,001,110	Life Sciences
06-371-IS	Laboratory for Imaging Spectroscopy Applications	Developing new instrumentation for remote sensing will support the diverse applications of spectral imaging systems, which include astronomical imaging (star formation, galactic evolution), environmental monitoring (pollution in rivers, industrial plants, growth of illegal crops), earth observations from airspace (crop management, city planning), biomedical imaging (cell abnormalities, microscopy) counterfeit detection (money, art) and retinal imaging (security, glaucoma).	Naylor, David	University of Lethbridge	$1,856,900	$742,760	Other/ Multi-discipline
06-372-IS	Submillimeter Instruments for Astronomy	The research team, through the Alberta Centre for Advanced Imaging, will contribute unique expertise in the hardware, software and analysis techniques to the production of the Fourier Transform Spectrometer for the James Clerk Maxwell Telescope in Hawaii. This collaborative project involves four Canadian institutions and international collaborators, and supports the technology development of improved imaging tools to be applied in numerous fields.	Naylor, David	University of Lethbridge	$6,772,280	$408,000	Other/ Multi-discipline

Project Number	Project Title	Descriptive Summary	Primary Investigator	Lead Organization	Total Project Cost	ASRIP Funds Approved	Key Strategic Area
06-375-PT	Compute Canada – Alberta	This initiative enhances and links the high performance computing infrastructure of academic institutions across Canada. Through the WestGrid Consortia, which includes 4 Alberta institutions, the investment will help researchers in a broad range of disciplines solve complex problems quickly by providing access to powerful high performance computing resources, technical support and tools for visualization and scientific collaboration across institutions.	Schaeffer, Jonathan	U of A, U of C, U of L, AU, Banff Centre	$59,999,997	$6,750,000	Other/ Multi-discipline
06-348-PT	Synergies: The Canadian Information Network for Research in the Social Sciences and Humanities	Funding supports Alberta's role in this national project, a cooperative effort amongst 25 universities across Canada to create trusted repositories that will allow for permanent access to research output. The Synergies initiative will form a single, decentralized, multidisciplinary database of Canadian research which will improve researchers' access to online resources and give them cutting-edge tools to do their research.	Westell, Mary	University of Calgary	$11,446,077	$408,409	Other/ Multi-discipline
				TOTAL:	$668,796,504	$125,000,929	